

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND

NATIONAL ASSOCIATION OF)	
HOME BUILDERS OF THE UNITED)	
STATES, et al.,)	Case No. 8:24-cv-03024-PX
)	
Plaintiffs,)	
)	AMICUS CURIAE BRIEF IN SUPPORT
v.)	OF DEFENDANT'S MOTION TO
)	DISMISS, OR, IN THE ALTERNATIVE,
MONTGOMERY COUNTY,)	MOTION FOR SUMMARY JUDGMENT,
MARYLAND)	AND REQUEST FOR HEARING*
)	
Defendant.)	
_____)	

*No party's counsel authored the attached *amicus curiae* brief in whole or in part, and no party or its counsel contributed money to fund the preparation or submission of the attached *amicus curiae* brief. See L.R. 105.12(b).

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Clean Air Fine Particle Implementation Rule, 72 Fed. Reg. 20,586 (Apr. 25, 2007)	8
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Energy Conservation Program: Energy Conservation Standards for Residential Water Heaters, Direct Heating Equipment, and Pool Heaters, 75 Fed. Reg. 20,112 (Apr. 16, 2010).	18
Energy of Conservation Program for Consumer Products; Proposed Rulemaking and Public Hearings Regarding Energy Efficiency Standards for Refrigerators and Refrigerator-Freezers, Freezers, Clothes Dryers, Water Heaters, Room Air Conditioners, Kitchen Ranges and Ovens, Central Air Conditioners, and Furnaces, 47 Fed. Reg. 14,424 (April 2, 1982).	17
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National Ambient Air Quality Standards for Particulate Matter, 71 Fed. Reg. 61,144 (Oct. 17, 2006).....	8
National Primary and Secondary Ambient Air Quality Standards, 36 Fed. Reg. 8186 (Apr. 30, 1971)	6
Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers (PM _{2.5})—Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC), 72 Fed. Reg. 54,112 (Sept. 21, 2007)	9
Primary National Ambient Air Quality Standards for Nitrogen Dioxide, 75 Fed. Reg. 6474 (Feb. 9, 2010)	6

U.S. EPA, Review of the Primary National Ambient Air Quality Standards for Oxides of Nitrogen, 83 Fed. Reg. 17,226 (April 18, 2018)	7
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Other Authorities

Am. Cancer Soc’y, <i>Benzene and Cancer Risk</i>	10
Am. Lung Ass’n, <i>Literature Review on the Impacts of Residential Combustion, Final Report</i> (2022)	11
Am. Pub. Health Ass’n, <i>Gas Stove Emissions are a Public Health Concern: Exposure to Indoor Nitrogen Dioxide Increases Risk of Illness in Children, Older Adults, and People with Underlying Health Conditions</i> (Nov. 8, 2022)	11
Andee Krasner et al., <i>Cooking with Gas, Household Air Pollution, and Asthma: Little Recognized Risk for Children</i> , 83 J. Env’t Health 8 (2021)	5
Beyond Gas, <i>Cooking Up Danger: Community Study Reveals Hazardous Nitrogen Dioxide Levels in DC and Maryland Kitchens</i> (Nov. 2024)	1, 2, 7, 8
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Jason J. Rose et al., <i>Carbon Monoxide Poisoning: Pathogenesis, Management, and Future Directions of Therapy</i> , 195 Am. J. Respiratory & Critical Care Med. 596 (2017)	9
Jennifer M. Logue et al., <i>Pollutant Exposures from Natural Gas Cooking Burners: A Simulation- Based Assessment for Southern California</i> , 122 Env’t Health Perspectives 43 (Jan. 2014)	7
Md. Pub. Serv. Comm’n Case No. 9673 (Complaint of the Office of People’s Counsel Against Washington Gas Light Company and WGL Energy Services, Inc.)	3
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Montgomery Cnty. Resolution No. 18-974, <i>Energy Climate Mobilization</i> (Dec. 5, 2017)	15
Montgomery County Climate Action Plan (June 2021)	15
Nat’l Ctr. for Healthy Hous., <i>Studying the Optimal Ventilation for Environmental Indoor Air Quality</i> 3 (Apr. 2022)	7
Neil E. Klepeis et al., <i>The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants</i> , 11 J. Exposure Analysis & Env’t Epidemiology 231 (2001)	6
Rewiring America, <i>Breathe Easy</i> (Dec. 2024)	13

Sonoma Technology, <i>Ozone Impacts from Building Combustion Sources on Nonattainment Areas in Maryland</i> (Sept. 25, 2024).....	2
State Climate Policy Dashboard, <i>Greenhouse Gas Emissions Projections in Maryland</i>	14
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Tianchao Hu et al., <i>Compilation of Published PM_{2.5} Emission Rates for Cooking, Candles and Incense for Use in Modeling of Exposures in Residences</i> 11 (Aug. 2012).....	9
U.S. Center for Disease Control, <i>Polycyclic Aromatic Hydrocarbons (PAHs) Fact Sheet</i> (Nov. 2009)	10
U.S. EPA, <i>Air Quality Design Values</i> ,.....	13
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U.S. EPA, <i>Health Effects of Ozone Pollution</i>	12
U.S. EPA, <i>Integrated Science Assessment (ISA) For Oxides of Nitrogen – Health Criteria</i> , (Jan. 2016)	7
U.S. EPA, <i>Integrated Science Assessment for Oxides of Nitrogen – Health Criteria</i> (July 2008) ..	7
U.S. EPA, <i>Integrated Science Assessment for Ozone and Related Photochemical Oxidants</i> (Feb. 2013)	12, 13
U.S. EPA, <i>Integrated Science Assessment for Particulate Matter ES-23</i> (Dec. 2019)	9
U.S. EPA, <i>National Emissions Inventory (NEI) Data</i>	12
U.S. EPA, <i>Ozone National Ambient Air Quality Standards (NAAQS)</i>	13
U.S. EPA, <i>Report to Congress on Indoor Air Quality Volume II: Assessment and Control of Indoor Air Pollution</i> (Aug. 1989)	6
U.S. EPA, <i>The Inside Story: A Guide to Indoor Air Quality</i>	5
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STATEMENT OF INTEREST

Founded in 1892, Sierra Club is a national grassroots environmental organization with more than 612,000 members nationwide, including over 14,000 members in Maryland, many of whom live in Montgomery County. For decades, Sierra Club has supported policies that limit pollution from fossil fuels and promote clean energy. Sierra Club's Building Electrification campaign endeavors to educate the public about the health harms caused by burning methane gas in homes, offices, and federal buildings and advocates for policies that protect against such harms.

The Chesapeake Climate Action Network ("CCAN") is a grassroots organization dedicated exclusively to fighting for bold and just solutions to climate change in the Chesapeake region of Maryland, Virginia, and Washington, D.C. CCAN's mission is to build a diverse movement powerful enough to put this region on the path to climate stability, while using its proximity to the nation's capital to inspire action in neighboring states, around the country, and across the world. CCAN has more than 35,000 members across Maryland, with more than 11,000 in Montgomery County alone, and was an ardent supporter of the passage of Montgomery County Bill 13-22.

Sierra Club and CCAN have been actively highlighting the public health threats of gas combustion in Maryland. In November 2024, Sierra Club released a report on indoor air quality testing in nearly 700 kitchens across the Washington, D.C. metro area with gas stoves.¹ In nearly-two thirds of the kitchens tested, the study found significantly elevated levels of nitrogen oxide—well in excess of the federal health-based standard for outdoor air.² Nitrogen oxide,

¹ Beyond Gas, *Cooking Up Danger* (Nov. 2024), available at <https://beyondgasdc.org/cooking-up-danger-community-study-reveals-hazardous-nitrogen-dioxide-levels-in-dc-and-maryland-kitchens/>.

² *Id.* at 3.

which is a harmful respiratory irritant in its own right, is also a precursor to ozone (also called smog), a dangerous air pollutant that already exceeds the U.S. Environmental Protection Agency's safe limits in the Baltimore, Maryland area.³ Both Sierra Club and CCAN have issued reports demonstrating the significant contribution of gas combustion in buildings to outdoor air pollution in the form of nitrogen oxide.⁴ In fact, the report co-authored by CCAN in September 2023 found that pollution from fossil fuel equipment in buildings emits significantly more nitrogen oxide than regional power plants.⁵

Sierra Club and CCAN are also engaged in multiple administrative and legislative efforts to regulate Marylanders' exposure to harmful air pollution from gas combustion. Sierra Club and CCAN have filed comments with the Maryland Public Service Commission in support of long-term planning to wind down the gas system, and Sierra Club has raised alarms about Plaintiff Washington Gas Light Company's attempts to spend millions of ratepayer dollars building new gas distribution pipes, as well as its advertising to customers that misleadingly portrays gas installation as an environmentally friendly action.^{6,7}

Moreover, both CCAN and Sierra Club have been active proponents of Maryland legislation and regulations that would require purchases of new electric heating equipment in

³ Sonoma Technology, *Ozone Impacts from Building Combustion Sources on Nonattainment Areas in Maryland* (Sept. 25, 2024), available at https://www.sierraclub.org/sites/default/files/2024-11/md_buildingso3_final.pdf.

⁴ *Id.*

⁵ CCAN, et al., *Cutting Through the Smog: How Air Quality Standards Help Solve the Hidden Health Toll Of Air Pollution From Maryland's Homes And Businesses* at 2 (Sept. 2023), https://www.greenandhealthyhomes.org/wp-content/uploads/MD-NOx-Report- V12_unembargoed.pdf.

⁶ Md. Pub. Serv. Comm'n Case Nos. 9707 (Petition of the Office of People's Counsel for Near-Term, Priority Actions and Comprehensive, Long-Term Planning For Maryland's Gas Companies), 9708 (Washington Gas Light Company's Application for Approval of a New Gas System Strategic Infrastructure Development and Enhancement Plan and Accompanying Cost Recovery Mechanism), & 9673 (Complaint of the Office of People's Counsel Against Washington Gas Light Company and WGL Energy Services, Inc.).

homes, require building owners to reduce emissions from fuel combustion in their buildings, and require gas companies to reduce emissions from heating equipment throughout their service territories. CCAN and Sierra Club vigorously supported Montgomery County's Comprehensive Building Decarbonization ordinance. Some of the actions CCAN members took in support of the legislation include the submission of 548 written comments, favorable testimony at committee hearings, and the distribution of 500 pro-electrification yard signs across the county.

In states including California, Colorado, New York, and Washington, Sierra Club has filed *amicus* briefs and intervened in support of state and local governments' efforts to exercise their traditional police powers to protect public health and safety by regulating the combustion of gas in homes and buildings. Sierra Club and CCAN have an interest in ensuring that federal law is not misinterpreted to thwart the ability of Montgomery County, other localities, or other states to safeguard their residents.

INTRODUCTION AND SUMMARY OF ARGUMENT

There is an established scientific basis and growing public understanding that methane-gas-burning appliances inside our homes, schools, and workplaces are making us sick. While the wide-ranging health impacts attributable to emissions from gas appliances were first recognized decades ago, more recent studies have uncovered the true extent and severity of the connection. It is now indisputable that gas appliances are a leading source of both indoor and outdoor air pollution. In response, states and localities—including Montgomery County—have acted on public concern and exercised their legislative authority to transition buildings away from combusting fossil fuels to abate the health, climate, and air quality impacts of gas appliances.

This pollution causes serious harm, including lung diseases, such as asthma and chronic obstructive pulmonary disease, cardiovascular disease, cognitive deficits, cancer, and death.

Children living in homes with gas stoves are 42% more likely to experience asthma symptoms.⁸

Nearly 13% of childhood asthma nationwide is attributable to gas stove use.⁹

ARGUMENT

I. Gas Appliances Emit Harmful Pollutants That Degrade Both Indoor and Outdoor Air Quality and Threaten Public Health.

Termed “natural gas” by industry, the blend of chemicals that is piped into homes and other buildings across the country is primarily composed of methane.¹⁰ The chemical byproducts of combusting gas include the greenhouse gas carbon dioxide, as well as nitrogen dioxide,¹¹ carbon monoxide, particulate matter, and volatile organic compounds such as formaldehyde.¹² Exposure to these pollutants has been increasingly linked to negative human health effects, including higher rates of respiratory and cardiovascular illnesses, such as childhood asthma, as well as reduced lung function and premature death.¹³ That these pollutants are generated—and in large part remain—indoors raises even greater concerns for public welfare, given that U.S.

⁸ Weiwei Lin et al., *Meta-Analysis of the Effects of Indoor Nitrogen Dioxide and Gas Cooking on Asthma and Wheeze in Children*, 42 Int’l J. Epidemiology 1728 (Dec. 2013), available at <https://doi.org/10.1093/ije/dyt150>.

⁹ Talor Gruenwald et al., *Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States*, 20 Int’l J. Env’t Rsch. & Pub. Health 75 (2023), available at <https://doi.org/10.3390/ijerph20010075>.

¹⁰ Drew R. Michanowicz et al., *Home Is Where the Pipeline Ends: Characterization of Volatile Organic Compounds Present in Natural Gas at the Point of the Residential End User*, 56 Env’t Sci. & Tech. 10258, 10258 (June 2022), available at <https://pubs.acs.org/doi/10.1021/acs.est.1c08298> (identifying 296 volatile organic compounds aside from methane in cooking gas samples); Eric D. Lebel et al., *Composition, Emissions, and Air Quality Impacts of Hazardous Air Pollutants in Unburned Natural Gas from Residential Stoves in California*, 56 Env’t Sci. & Tech. 15828 (Oct. 20, 2022), available at <https://pubs.acs.org/doi/pdf/10.1021/acs.est.2c02581>.

¹¹ “Nitrogen Dioxide (NO₂) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO_x). Other nitrogen oxides include nitrous acid and nitric acid. NO₂ is used as the indicator for the larger group of nitrogen oxides.” U.S. EPA, *Basic Information about NO₂*, available at <https://www.epa.gov/no2-pollution/basic-information-about-no2#What%20is%20NO2> (last updated July 16, 2024).

¹² U.S. EPA, *What are combustion products?*, available at <https://www.epa.gov/indoor-air-quality-iaq/what-are-combustion-products> (last updated Dec. 4, 2024); U.S. EPA, *Facts About Formaldehyde*, <https://www.epa.gov/formaldehyde/facts-about-formaldehyde> (last updated Sept. 11, 2024).

¹³ Andee Krasner et al., *Cooking with Gas, Household Air Pollution, and Asthma: Little Recognized Risk for Children*, 83 J. Env’t Health 8, 14 (2021), available at <https://www.proquest.com/docview/2505418593?sourcetype=Scholarly%20Journals>.

residents spend nearly 90% of their time indoors.¹⁴ In addition, gas stoves leak unburned gas containing carcinogenic pollutants—such as benzene—into homes at a near-constant rate, even when those appliances are turned off.¹⁵

Nitrogen Dioxide. The U.S. Environmental Protection Agency (“EPA”) has long recognized that nitrogen dioxide, a prevalent pollutant from gas appliances, can cause asthma.¹⁶ Even short-term nitrogen dioxide exposure can cause impaired lung function, respiratory symptoms, inflammation of the airway, and asthma exacerbations requiring hospitalization.¹⁷ Exposure to nitrogen dioxide is also linked to chronic obstructive pulmonary disease, cardiovascular effects, diabetes, cancer, and reproductive harms.¹⁸ As EPA recognized in 2008, “homes with gas cooking appliances have approximately 50% to over 400% higher [nitrogen dioxide] concentrations than homes with electric cooking appliances.”¹⁹ Indeed, scientists at the Lawrence Berkeley National Laboratory demonstrated that up to 70% of residents living in homes with unvented²⁰ gas cooking appliances are exposed to nitrogen dioxide concentrations

¹⁴ U.S. EPA, *The Inside Story: A Guide to Indoor Air Quality*, available at <https://www.epa.gov/indoor-air-quality-iaq/inside-story-guide-indoor-air-quality> (last updated Oct. 22, 2024); Neil E. Klepeis et al., *The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants*, 11 J. Exposure Analysis & Env’t Epidemiology 231, 242 (2001) available at <https://pubmed.ncbi.nlm.nih.gov/11477521/>; see also U.S. EPA, *Report to Congress on Indoor Air Quality Volume II: Assessment and Control of Indoor Air Pollution* (Aug. 1989), available at <https://nepis.epa.gov/Exe/ZyPDF.cgi/9100LMBU.PDF?Dockey=9100LMBU.PDF>.

¹⁵ See Eric D. Lebel et al., *Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes*, 56 Env’t Sci. Tech. 2529, 2534 (2022), available at <https://pubs.acs.org/doi/10.1021/acs.est.1c04707> (research results showing that “most stoves and associated nearby piping leak some methane continuously”); Michanowicz et al., *supra* n.10, at 10266 (finding benzene and other carcinogenic pollutants in gas samples from home kitchens); Yannai S. Kashtan et al., *Gas and Propane Combustion from Stoves Emits Benzene and Increases Indoor Air Pollution*, 57 Env’t Sci. & Tech. 9653 (June 2023), available at <https://pubs.acs.org/doi/10.1021/acs.est.2c09289>.

¹⁶ National Primary and Secondary Ambient Air Quality Standards, 36 Fed. Reg. 8186 (Apr. 30, 1971).

¹⁷ Primary National Ambient Air Quality Standards for Nitrogen Dioxide, 75 Fed. Reg. 6474, 6479-80 (Feb. 9, 2010).

¹⁸ U.S. EPA, *Integrated Science Assessment (ISA) For Oxides of Nitrogen – Health Criteria*, 1-17, 1-22 to 1-30, 5-55 (Jan. 2016), available at <https://assessments.epa.gov/isa/document/&deid=310879>.

¹⁹ U.S. EPA, *Integrated Science Assessment for Oxides of Nitrogen – Health Criteria* at 2-38 (July 2008), available at <https://assessments.epa.gov/isa/document/&deid=194645#downloads>.

²⁰ Even exhaust ventilation of gas cooking appliances has proved to be less effective at reducing pollution than previously thought. See Nat’l Ctr. for Healthy Hous., *Studying the Optimal Ventilation for Environmental Indoor Air*

that exceed the National Ambient Air Quality Standard (EPA’s outdoor limit) of 100 parts per billion.²¹ These results mirror Sierra Club’s findings from testing nitrogen dioxide levels in kitchens across Maryland and the District of Columbia.²² In addition to registering unsafe levels of nitrogen dioxide pollution in two-thirds of the tested homes, this study highlighted the unpredictability of gas pollution. In some cases, turning on a kitchen fan unexpectedly increased nitrogen oxide emissions, and nitrogen dioxide levels were often even higher in upstairs bedrooms than in the kitchens themselves.²³

Particulate Matter. Particulate matter is another form of air pollution generated by gas appliances that poses a unique threat to human health.²⁴ PM_{2.5}, or fine particulate matter, refers to inhalable particles with diameters that are 2.5 micrometers and smaller, and thus easily penetrate the defenses of our lungs.²⁵ PM_{2.5} is mainly produced by “combustion processes and by atmospheric reactions of various gaseous pollutants.”²⁶ Exposure to PM_{2.5} pollution has been linked to premature mortality; heart attacks, strokes, worsening of chronic heart failure, and sudden cardiac death; impaired fetal and childhood lung function development; acute and chronic decreases in lung function; respiratory infections; respiratory emergency department

Quality 3 (Apr. 2022), available at https://nchh.org/resource-library/report_studying-the-optimal-ventilation-for-environmental-indoor-air-quality.pdf (emissions monitoring in Chicago and New York homes found no significant reduction in NO₂ from ventilation and 13% to 44% reductions in other contaminants).

²¹ Jennifer M. Logue et al., *Pollutant Exposures from Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California*, 122 Env’t Health Perspectives 43, 47, 49-50 (Jan. 2014), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC3888569/>; U.S. EPA, Review of the Primary National Ambient Air Quality Standards for Oxides of Nitrogen, 83 Fed. Reg. 17,226, 17,226-27 (April 18, 2018).

²² See *Beyond Gas*, *supra* n.1.

²³ See *id.* at P10.

²⁴ National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652, 38,653–54 (July 18, 1997).

²⁵ *Id.* at 38,654.

²⁶ National Ambient Air Quality Standards for Particulate Matter, 71 Fed. Reg. 61,144, 61,146 (Oct. 17, 2006).

visits, hospitalizations, and deaths; and the development and exacerbation of asthma.²⁷ Even short-term exposure “is likely causally associated with mortality from cardiopulmonary diseases, increased hospitalization and emergency department visits for cardiopulmonary diseases, increased respiratory symptoms, decreased lung function, and changes in physiological indicators for cardiovascular health.”²⁸ While PM_{2.5} is a byproduct of cooking on both electric and gas stoves, emissions from gas stoves can be two times higher than from electric stoves.²⁹ There is no safe level of PM_{2.5} exposure.³⁰

Carbon Monoxide. Carbon monoxide poisoning results in more than 400 deaths and more than 100,000 emergency department visits in the United States annually.³¹ Carbon monoxide exposure is also linked to respiratory illnesses and neurological impairment.³² According to EPA, homes with gas stoves have higher carbon monoxide levels than those without.³³ Indeed, some gas stoves create high indoor carbon monoxide levels that nearly exceed the health-based outdoor ambient air quality standards established by EPA.³⁴

²⁷ Clean Air Fine Particle Implementation Rule, 72 Fed. Reg. 20,586, 20,586-87 (Apr. 25, 2007). *See also* U.S. EPA, *Health and Environmental Effects of Particulate Matter (PM): Health Effects*, available at <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm> (last updated July 16, 2024).

²⁸ Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers (PM_{2.5})—Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC), 72 Fed. Reg. 54,112, 54,128 (Sept. 21, 2007).

²⁹ Tianchao Hu et al., *Compilation of Published PM_{2.5} Emission Rates for Cooking, Candles and Incense for Use in Modeling of Exposures in Residences*, LBNL-5890E, 11 (Aug. 2012), available at <https://indoor.lbl.gov/publications/compilation-published-pm25-emission>.

³⁰ U.S. EPA, *Integrated Science Assessment for Particulate Matter ES-23* (Dec. 2019), available at <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=347534>.

³¹ U.S. Ctr. for Disease Control, *Carbon Monoxide Poisoning*, available at <https://www.cdc.gov/carbon-monoxide/about/index.html> (last visited Dec. 9, 2024); *see also* Jason J. Rose et al., *Carbon Monoxide Poisoning: Pathogenesis, Management, and Future Directions of Therapy*, 195 Am. J. Respiratory & Critical Care Med. 596 (2017), available at <https://www.atsjournals.org/doi/full/10.1164/rccm.201606-1275CI>.

³² U.S. EPA, *supra* n.30 at 2-7.

³³ U.S. EPA, *Carbon Monoxide's Impact on Indoor Air Quality*, available at <https://www.epa.gov/indoor-air-quality-iaq/carbon-monoxides-impact-indoor-air-quality> (last updated Dec. 4, 2024).

³⁴ *See id.* (gas stoves can lead to carbon monoxide concentrations over 30ppm); 40 C.F.R. § 50.8(a)(1),(2) (setting carbon monoxide ambient air quality standard at 9ppm for 8-hour exposure window and at 35ppm for a 1-hour exposure window).

Cancer-Causing Compounds. In addition to the byproducts of fossil fuel burning that have been understood for decades, newer research indicates that gas appliances also release semi-volatile organic compounds known as polycyclic aromatic hydrocarbons or PAHs,³⁵ as well as volatile organic compounds, such as formaldehyde³⁶ and benzene.³⁷ All of these are linked to cancer and, thus, no safe level of exposure can be recommended. For instance, long-term exposure to benzene can lead to blood disorders, and, according to the American Cancer Society, is linked to higher rates of cancer, including leukemia and other blood cancers. Short-term exposure to benzene can also cause “drowsiness, dizziness, headaches, tremors, confusion, and/or unconsciousness.”³⁸ A 2022 study of Boston’s gas supply revealed the presence of 296 volatile organic compounds, including 21 hazardous air pollutants.³⁹ Researchers in California similarly found 12 hazardous air pollutants in gas piped into homes, including benzene in similar concentrations to those in secondhand tobacco smoke.⁴⁰

Given the robust body of scientific literature evidencing these harms, leading national health organizations are recognizing the immense public health risks associated with gas appliances. In June 2022, the American Medical Association stated that it:

- (1) recognizes the association between the use of gas stoves, indoor nitrogen dioxide levels and asthma;
- (2) will inform its members and, to the extent possible, health care providers, the public, and relevant organizations that use of a gas stove increases household air pollution and the risk of childhood asthma and asthma severity; which can be mitigated by reducing the use of the gas cooking stove, using adequate ventilation, and/or using an appropriate air filter; and

³⁵ U.S. Ctr. for Disease Control, Polycyclic Aromatic Hydrocarbons (PAHs) Fact Sheet (Nov. 2009), *available at* https://www.epa.gov/sites/default/files/2014-03/documents/pahs_factsheet_cdc_2013.pdf.

³⁶ U.S. EPA, *supra* n.12.

³⁷ Michanowicz et al., *supra* n.10, at 10266; Kashtan et al., *supra* n.15.

³⁸ Am. Cancer Soc’y, *Benzene and Cancer Risk*, *available at* <https://www.cancer.org/cancer/risk-prevention/chemicals/benzene.html> (last revised Feb. 1, 2023).

³⁹ Michanowicz et al., *supra* n. 10, at 10258.

⁴⁰ Lebel et al., *supra* n.10, at 15,828, 15828, 15,835.

(3) will advocate for innovative programs to assist with mitigation of cost to encourage the transition from gas stoves to electric stoves in an equitable manner.⁴¹

In July 2022, the American Lung Association published a report synthesizing its literature review of the impacts of internal residential combustion, finding that gas appliance emissions degrade indoor air quality, resulting in worse asthma symptoms and reduced lung function in children and other vulnerable populations.⁴² In November 2022, the American Public Health Association adopted a policy acknowledging the scientific evidence linking gas stove emissions and negative health effects and called on regulatory agencies and policymakers to enact measures to abate gas appliance emissions.⁴³ A County memorandum accompanying the passage of the Comprehensive Building Decarbonization ordinance addresses this public health concern, stating that decarbonized buildings are “healthier for indoor air quality since they do not produce carbon monoxide and nitrogen oxide as byproducts, pollutants that have been shown to contribute asthma in children, respiratory illness, cardiovascular disease, and premature death – a problem disproportionately affecting communities of color.”⁴⁴

Fossil fuel combustion in buildings is a major source of outdoor air pollution as well. According to data from EPA’s National Emissions Inventory, combusting fossil fuels in buildings releases over 250,000 tons per year of carbon monoxide, over 460,000 tons of nitrogen

⁴¹ Am. Med. Ass’n, House of Delegates Report of Reference Committee D at 16-17, Res. 439, A-22 (2022), available at <https://policysearch.ama-assn.org/policyfinder/detail/gas%20stove?uri=%2FAMADoc%2Fdirectives.xml-D-135.964.xml>.

⁴² Am. Lung Ass’n, *Literature Review on the Impacts of Residential Combustion, Final Report* (2022), available at https://www.lung.org/getmedia/2786f983-d971-43ad-962b-8370c950cbd6/ICF_Impacts-of-Residential-Combustion_FINAL_071022.pdf.

⁴³ Am. Pub. Health Ass’n, *Gas Stove Emissions Are a Public Health Concern: Exposure to Indoor Nitrogen Dioxide Increases Risk of Illness in Children, Older Adults, and People with Underlying Health Conditions* (Nov. 8, 2022), available at <https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2023/01/18/Gas-Stove-Emissions>.

⁴⁴ Memorandum from County Executive Marc Elrich to Montgomery County Council President Gabe Albornoz on Introduction of Bill 13-22, Comprehensive Building Decarbonization (June 9, 2022).

oxides, and more than 15,000 tons of fine particulate matter nationwide.⁴⁵ In Maryland, the nitrogen oxide pollution from fossil fuel combustion in buildings is three times greater than from all of Maryland's fossil fuel power plants combined.⁴⁶

The consequences of these emissions on ambient air quality are significant and harmful. Ground-level ozone is a highly reactive gas that is formed by interactions between nitrogen oxides and volatile organic compounds, which are emitted by gas-burning equipment and other sources, in the presence of heat and sunlight.⁴⁷ Ozone exposure, even short-term exposure, is linked to chronic conditions affecting the respiratory, cardiovascular, reproductive, and central nervous systems, as well as premature mortality.⁴⁸ Respiratory symptoms of ozone exposure include coughing, shortness of breath, and inflammation of the airways.⁴⁹ Ozone exposure is also associated with increased asthma attacks, emergency room visits, hospitalization, and medication for asthma.⁵⁰ Rewiring America recently published a study finding that substituting electric appliances for fossil fuel appliances that vent outdoors (*i.e.*, space and water heaters and clothes dryers) would produce \$40 billion in annual public health benefits—including 3,400 fewer premature deaths, 1,300 fewer hospital admissions and emergency room visits, and 220,000 fewer asthma attacks.⁵¹ While the health impacts of ozone are ubiquitous, certain populations are

⁴⁵ Data from U.S. EPA, *2017 National Emissions Inventory (NEI) Data*, available at <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#dataq>.

⁴⁶ See CCAN et. al, *supra* n.5 at 11.

⁴⁷ U.S. EPA, *What is Ozone?*, available at <https://www.epa.gov/ozone-pollution-and-your-patients-health/what-ozone#> (last updated June 20, 2024).

⁴⁸ U.S. EPA, *Integrated Science Assessment for Ozone and Related Photochemical Oxidants* 1-5, Tbl. 1-1 (Feb. 2013), available at https://ordspub.epa.gov/ords/eims/eimscomm.getfile?p_download_id=511347 [hereinafter “2013 Ozone Integrated Science Assessment”].

⁴⁹ U.S. EPA, *Health Effects of Ozone Pollution*, available at <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution> (last updated Apr. 9, 2024).

⁵⁰ U.S. EPA *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*, at 3-27 to 3-28, available at <https://www3.epa.gov/ttn/naaqs/standards/ozone/data/20140829pa.pdf>.

⁵¹ Rewiring America, *Breathe Easy* (Dec. 2024), available at <https://a-us.storyblok.com/f/1021068/x/f03d441bd0/breathe-easy-report-rewiring-america.pdf>.

at an increased risk for ozone-related health effects, including people with asthma, children, people over the age of 65, and outdoor workers.⁵² As discussed above, multiple areas in Maryland—including the Baltimore and Montgomery County areas—have historically been and are still currently classified as being in nonattainment of federal ozone standards. In the above-described report that Sierra Club released on the impact of emissions from Maryland’s buildings on ozone levels, modeling revealed that on high ozone days, buildings in Maryland contributed as much as 1.99 parts per billion (ppb) to air quality violations. Given that Maryland is often about 1 to 3 ppb in excess of the federal ozone standard of 70 ppb, reducing gas combustion in buildings—through policies such as clean building codes—could bring Maryland from an air quality level that is unsafe and violates EPA’s standards to a safe air quality level.⁵³

II. Gas Combustion in Buildings Also Causes Harmful Climate Pollution, In Contravention of Maryland Law.

In addition to contributing to harmful ozone pollution, gas combustion in buildings is also a significant source of greenhouse gas emissions. This climate pollution impedes Maryland’s ability to comply with its binding climate laws, and has national and international repercussions because it worsens the climate crisis. As described above, methane gas combustion in Maryland’s building sector releases the greenhouse gases carbon dioxide and methane, and additional methane leaks from gas distribution pipes that supply buildings with this fuel. The building sector comprises a significant and growing share of Maryland’s total greenhouse gas emissions. According to the State Climate Policy Dashboard database, which models the anticipated effect of state policies on future emissions, about 17% of Maryland’s total

⁵² U.S. EPA, *supra* n.47 at 2-30.

⁵³ U.S. EPA, *Ozone National Ambient Air Quality Standards (NAAQS)*, available at <https://www.epa.gov/ground-level-ozone-pollution/ozone-national-ambient-air-quality-standards-naaqs>; U.S. EPA, *Air Quality Design Values*, available at https://www.epa.gov/system/files/documents/2024-06/o3_designvalues_2021_2023_final_06_04_24.xlsx.

greenhouse gas emissions came from the building sector in 2024.⁵⁴ The model reflects that, as other policies reduce emissions from other sectors over the next 25 years, the share of projected emissions from buildings will rise from about 18% in 2025 to 30% in 2050.⁵⁵

In 2022, acknowledging the myriad harms posed by climate change, especially in flood-prone coastal areas such as Maryland’s Eastern Shore, the Maryland General Assembly passed the Climate Solutions Now Act, which requires Maryland to reduce statewide emissions 60% below 2006 levels by 2031 and reach carbon neutrality by 2045.⁵⁶ As described in Defendant’s Motion to Dismiss, Montgomery County adopted an even more ambitious climate policy, resolving to reduce its greenhouse gas emissions by 80% by 2027 and 100% by 2035.⁵⁷ In this resolution, the County aptly defines climate change as “an unprecedented global emergency” consisting of drastic global changes, including “mega-droughts, heat waves, super-storms, flash flooding, [and] the migration of mosquito-borne diseases.”⁵⁸

Montgomery County’s 2021 Climate Action Plan details a range of strategies to achieve its climate goals, including converting gas-fueled space and water heating in the majority of its residential and commercial buildings to electric heat pumps, as well as ensuring all new building developments are all-electric.⁵⁹ The Comprehensive Building Decarbonization ordinance, by requiring the County to adopt regulations that would reduce greenhouse gas emissions from buildings, is a critical tool for effectuating the mandates in both county and state climate laws.

⁵⁴ State Climate Policy Dashboard, *Greenhouse Gas Emissions Projections in Maryland*, available at <https://www.climatepolicydashboard.org/states/Maryland>.

⁵⁵ *Id.*

⁵⁶ MD. CODE ANN., ENVIR. §§ 2–1204.1, 2–1204.2.

⁵⁷ Montgomery Cnty. Resolution No. 18-974, *Energy Climate Mobilization* (Dec. 5, 2017).

⁵⁸ *Id.*

⁵⁹ *Montgomery County Climate Action Plan* at 95 (June 2021), available at <https://www.montgomerycountymd.gov/climate/Resources/Files/climate/climate-action-plan.pdf>.

III. Regulating Air Pollution in Buildings Falls Squarely Within Montgomery County’s Police Powers.

The Comprehensive Building Decarbonization ordinance is not preempted by the Energy Policy and Conservation Act (“EPCA”) because EPCA is chiefly concerned with setting energy efficiency standards for appliances, whereas the ordinance at issue is aimed at reducing emissions from buildings. This ordinance neither establishes, references, relies upon, nor is connected to any “energy efficiency” or “energy use” standards for any covered appliances, as those terms are defined under EPCA. *See Metro Taxicab Bd. of Trade v. City of New York*, 615 F.3d 152, 156-57 (2d Cir. 2010) (citing *Cal. Div. of Labor Stds. Enforcement v. Dillingham Constr., N.A.*, 519 U.S. 316, 325 (2010)) (stating that a law is preempted when a preempted subject matter is referenced or essential to the law’s operation). Simply put, it is not “the type of state law that Congress intended [EPCA] to supersede.” *De Buono v. NYSA-ILA Med. and Clinical Services Fund*, 520 U.S. 806, 814 (1997).

To the contrary, the ordinance is a valid exercise of Montgomery County’s police power, which authorizes the county to promulgate regulations that protect its residents’ public health and safety. The Fourth Circuit has explained that states clearly have the “police power to promote the public health, safety, welfare, and morals of the State.” *Star Scientific Inc. v. Beales*, 278 F.3d 339, 361 (4th Cir. 2002) (upholding Virginia’s right to exact damages from tobacco manufacturers as compensation for the harms cigarettes caused to Virginia residents). Counties have similarly broad police powers as states. *See, e.g., Smoke Rise, Inc. v. Washington Suburban Sanitary Comm’n*, 400 F. Supp. 1369, 1386 (D. Md. 1975). As set forth above, by reducing both indoor and outdoor air pollution from buildings, the Comprehensive Building Decarbonization

ordinance, once implemented through code amendments, will provide critical public health protections and therefore falls squarely within the state's police powers.

Plaintiffs' overbroad reading of EPCA would hamstring states' ability to protect their residents from harmful pollution, an important element of their police power that is far removed from regulating appliances' energy efficiency, and that Congress did not intend to disturb in enacting EPCA. *See, e.g.*, 75 Fed. Reg. 59,470, 59,530 (Sept. 27, 2010) (U.S. Department of Energy explaining that it "interprets 'regulation concerning energy use'" in EPCA's preemption provision "to be equivalent to an 'energy conservation standard'"); 47 Fed. Reg. 14,424, 14,456 (Apr. 2, 1982) (U.S. Department of Energy proposing to review waivers of preemption only for "State regulations that are appliance *efficiency* standards," because "[a state] rule whose purpose is other than energy efficiency such as a law on fire safety, would not appear to be preempted by the Federal rule, even if it has a secondary and incidental effect of improving the efficiency of a covered product").

Moreover, Plaintiffs' expansive reading of EPCA's preemptive scope would run contrary to other Congressional enactments that have carefully preserved states' and localities' traditional authority to address outdoor air pollution, including emissions from combustion appliances. *See, e.g.*, 42 U.S.C. § 7401 (finding that "air pollution control at its source is the primary responsibility of States and local governments"); 42 U.S.C. § 7416 (preserving the "right of any State or political subdivision thereof to adopt or enforce (1) any standard or limitation respecting emissions of air pollutants or (2) any requirement respecting control or abatement of air pollution"); 47 Fed. Reg. 29,231 (Jan. 7, 1986) (U.S. Environmental Protection Agency approving local emission standards for furnaces into California's Clean Air Act State Implementation Plan); 75 Fed. Reg. 20,112, 20,133 (Apr. 16, 2010) (U.S. Department of Energy

recognizing that local emission standards for water heaters can affect their efficiency). And because no federal law grants any federal agency general authority to regulate indoor air pollution,⁶⁰ Plaintiffs' interpretation would create a regulatory void, where neither federal nor state and local authorities can act to address this public health threat. EPCA cannot reasonably be read to preempt this and other important exercises of police power to protect health and safety *sub silentio*.

CONCLUSION

The undersigned *amici* urge this Court to uphold Montgomery County's right to protect Marylanders and their environment by reducing the unsafe, unhealthy pollution stemming from methane gas combustion. For the reasons stated above, *amici* request this Court grant Defendant's Motion and dismiss Plaintiffs' claims with prejudice or enter summary judgment in Defendant's favor.

Dated: January 15, 2025

Respectfully Submitted,

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⁶⁰ See EPA, Regulatory and Guidance Information by Topic: Air ("EPA does not regulate indoor air"), <https://tinyurl.com/mpfskudp>.